

# INVESTIGATOR'S ANNUAL REPORT

## National Park Service

All or some of the information provided may be available to the public

<b>Reporting Year:</b> 2004	<b>Park:</b> Shenandoah NP						
<b>Principal Investigator:</b> Dr Shepard Zedaker	<b>Office Phone:</b> (540) 231-4855 <b>Email:</b> zedaker@vt.edu						
<b>Address:</b> Virginia Tech Department of Forestry 228 Cheatham Hall (0324) Blacksburg, VA 24061 US	<b>Office Fax:</b> (540) 231-3330						
<b>Additional investigators or key field assistants (first name, last name, office phone, office email):</b> <table><tr><td><b>Name:</b> Alan Biller</td><td><b>Phone:</b> (540) 999-3497</td><td><b>Email:</b> alan_biller@nps.gov</td></tr><tr><td><b>Name:</b> Jeff M. Matthews</td><td><b>Phone:</b> (540) 231-9929</td><td><b>Email:</b> jemmathe@vt.edu</td></tr></table>		<b>Name:</b> Alan Biller	<b>Phone:</b> (540) 999-3497	<b>Email:</b> alan_biller@nps.gov	<b>Name:</b> Jeff M. Matthews	<b>Phone:</b> (540) 231-9929	<b>Email:</b> jemmathe@vt.edu
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<b>Name:</b> Jeff M. Matthews	<b>Phone:</b> (540) 231-9929	<b>Email:</b> jemmathe@vt.edu					
<b>Permit#:</b> SHEN-2004-SCI-0001							
<b>Park-assigned Study Id. #:</b> SHEN-00293							
<b>Project Title:</b> Effect of fire intensity on post-fire abundance of invasive species along a temporal scale and their influence on native species composition and stand structure in Shenandoah National Park							
<b>Permit Start Date:</b> Feb 01, 2004	<b>Permit Expiration Date</b> Apr 30, 2006						
<b>Study Start Date:</b> Feb 01, 2004	<b>Study End Date</b> Apr 30, 2006						
<b>Study Status:</b> Continuing							
<b>Activity Type:</b> Research							
<b>Subject/Discipline:</b> Fire (Behavior, Ecology, Effects)							
<b>Objectives:</b> In Shenandoah National Park, shade-tolerant and long-distance seed-disseminating invasive species are displacing native vegetation after wildfires. Invasives' rapid growth rate and physiological adaptations allow them to outcompete native plants in many habitats. The regeneration after fire disturbances is of great concern to national park land managers, because it controls the composition of future forest stands. Managers need information about the density and dominance of invasives, such as tree-of-heaven (Ailanthus altissima Miller) and Japanese stilt grass (Microstegium vinenum), to evaluate whether treatments will be necessary to re-establish native vegetation. This study will measure invasive species density, dominance, and effects on native vegetation structure and composition following varying levels of fire intensity along a temporal gradient of time since wildfire. By sampling vegetation, rating fire severity, and evaluating fuel loadings along a series of transects with fixed radius plots installed at predetermined increments, we will be able to determine the effects of wildfire on native and invasive flora. Information gained in this study will aid land managers in understanding vegetation response following wildfires and in evaluating invasive species infestations							
<b>Findings and Status:</b> High intensity wildfires reduced species diversity initially but diversity returned to pre/unburned levels after 14 years.  Low intensity fires had the greatest impact on the diversity in the shrub layer.  The presence of invasive species was related to site quality but was not affected by wildfire intensity.  Since most invasive species found were early successional species that are intolerant of shade, they are unlikely to persist after a wildfire which does not destroy the forest canopy.							

Spending BAER funds for invasive plant control may only be warranted where the overstory has been completely destroyed	
<b>For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?</b> No	
<b>Funding provided this reporting year by NPS:</b> 0	<b>Funding provided this reporting year by other sources:</b> 30000
<b>Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college</b>	
<b>Full name of college or university:</b> n/a	<b>Annual funding provided by NPS to university or college this reporting year:</b> 0